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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,087	07/26/2001	Robert Tso	ST00011USU2(100-US-US)	7956

34408 7590 04/16/2007
THE ECLIPSE GROUP
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EXAMINER

CORRIELUS, JEAN B

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/916,087

Applicant(s)

TSO ET AL.

Examiner

Jean B. Corrielus

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 12-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 12-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 12-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12, line 3, "a reference oscillator" is vague and indefinite as there is an unclear antecedent in claim 1, line 8.

Claims 13-14 are likewise rejected because of their dependency to claim 12.

Specification

3. The disclosure is objected to because of the following informalities: the specification refers to "230" as a "reference oscillator" **and** a "crystal oscillator" it is suggested that the specification be amended to refer to device "230" as either a "reference oscillator" **or** a "crystal oscillator" for consistency.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3-7, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al US Patent No. 6,125,135 in view of applicant's admitted prior art page 8, lines 7-10.

Woo et al discloses a Global Positioning System (GPS) receiver (fig. 1), comprising: a Radio Frequency Front End encompassed by elements 103 and 106, comprising: single stage downconverter 103 using dual mixers 205 and 206; an I/Q intermediate Frequency (IF) filter (210 and 211), coupled to the downconverter 103; an Automatic Gain Control (AGC) amplifier 215-222, coupled to the downconverter 103; an analog-to-Digital Converter (ADC) 223-224, coupled to the AGC amplifier (215-222; and a frequency synthesizer section (225) inherently including an integrated Voltage Controlled Oscillator and a reference oscillator 226 for generating a reference frequency signal; and a digital processing section (111 and 112), coupled to the RF Front End. However, Woo et al does not explicitly teach that the I/Q IF filter is an active filter it also fails to teach that the noise bandwidth of the GPS receiver is set by the IF active filter and a frequency of 24.5535MHz plus or minus 40 parts per million. However, configure the I/Q IF filter as an active filter is old and well established in the art given that, it would have been obvious to one skill in the art to configure Woo et al as an active type filter as such filter consumes less chip area as oppose to regular type filter. In addition, active filters provide signal gain that is required by many practical applications such as GPS systems. Furthermore, applicant's admitted prior art at page 8, lines 7-9, teaches that it is well known in the art to set a noise bandwidth of a GPS receiver using a filter. Given

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that fact, it would have been obvious to one skill in the art to use the filter of Woo to set the bandwidth noise of the receiver in order to limit unwanted out of bands signals.

Note that a frequency of 24.5535 MHz is one of the standard frequencies that a reference oscillator generates in conventional GPS type receivers see for instance US patent publication No. 2006280278, paragraph 0073 and the AXIOM publication (copy is attached) page 28. Given that fact, it would have been obvious to one skill in the art to tune the reference oscillator of Woo in such a way as to output a reference frequency of 24.5535 MHz so as to be compatible with existing technology. In addition, note that the 40 ppm indicates the stability accuracy of the reference oscillator and such an accuracy would have readily provided by woo in order to stabilize the reference oscillator.

As per claim 3, it would have been obvious to one skill in the art to use generate output signals from the RF front end compatible with PECL as PECL are known in the art to generate high speed high speed output signals.

As per claim 4, it would have been obvious to one skill in the art to configure Woo and applicant's admitted prior art to include an acquisition signal generated by the frequency synthesizer in order to control received signal acquisition.

As per claim 5, it would have been obvious to one skill in the art to set the frequency acquisition to approximately equal to $37.3333f_0$, where $f_0=1.023\text{MHz}$ so as to satisfy system design requirements.

As per claim 6, it would have been obvious to one skill in the art to include a GPS clock output from the synthesizer in order to synchronize the receiver with the transmitting station.

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As per claim 7, it would have been obvious to one skill in the art to set the GPS clock signal to approximately equal to $48f_0$, where $f_0=1.023\text{MHz}$ so as to satisfy system design requirements.

As per claim 15, the GPS receiver includes an antenna 101 (external antenna assembly).

As per claim 17, it would have been obvious that the RF front end would have included an external loop filter so as satisfy system design requirements.

6. Claims 2 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al US Patent No. 6,125,135 in view of applicant's admitted prior art page 8, lines 7-10 and further in view of Ciccarelli et al, US Patent No. 6,359,940.

As per claim 2, Woo and applicant's admitted prior art teach every feature of the claimed invention but do not teach the further limitations of a Low noise Amplifier (LNA) coupled to an RF band select filter, which is coupled to an RF input of the front-end. In the same field of endeavor, Ciccarelli et al teaches fig. 1 the further limitations of a Low noise Amplifier (LNA) coupled to an RF band select filter 14, which is coupled to an RF input of the front-end see fig. 1. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Woo and admitted prior art in order to amplify and select the signal of interest for further processing.

As per claim 16, note that Ciccarelli et al teaches a band pass filter 14. The reason to combine would have been the same as provided above in reference to claim 2.

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7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al US Patent No. 6,125,135 in view of applicant's admitted prior art page 8, lines 7-10 and further in view of Hughes et al US patent publication No. US 2003/01532289 A1.

As applied to claim 1 above, Woo et al and applicant's admitted prior art page 8, lines 7-10 teach the invention substantially as claimed but do not explicitly teach a combiner to combine the filtered signal prior to providing said signal to the AGC amplifier. Hughes teaches the further limitation of combining the filtered I and Q signal in combiner 152 and provides the combined signal to an AGC circuit 162. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Woo et al and applicant's admitted prior art in order to reduce the complexity of the system since only a single gain control circuit would have been required after signal combining.

Allowable Subject Matter

8. Claims 12-14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments filed 3/19/07 have been fully considered but they are not persuasive. Applicant argues that the "active filter" is claimed as "an IQ intermediate frequency active filter" for GPS receiver and not simply as "an active filter" and that since such limitation is not taught by the primary reference and any other references

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such element is missing. The first point of the applicant's argument (as underlined) is not understood since the claimed "IQ IF active filter" is nothing but an "**active filter**" set or configured to process an intermediate frequency signal that includes both an inphase and quadrature components. With respect to the latter part of the argument, as noted above in the rejection, Woo teaches clearly an IQ IF filter. It only fails to teach that such a filter is **an active filter**. However, as noted in the rejection above, as evidence by at least US patent No. 6,055,265 (fig. 1, elements 71-73, col. 2, lines 34-36 and col. 5, lines 48-52), it is well known to implement an IQ IF filter as an "**active filter**" (note that filter 71-73 are IQ IF ^{active}~~passive~~ filters because each active filter is set to process an IF signal that include both I and Q components) and given such a teaching, one of ordinary skill in the art at the time of the invention would have been motivated to implement the filter of Woo et al as an "I/Q IF active filter" for the reasons provided above.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or **in the knowledge generally available to one of ordinary skill in the art**. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, US patent No. 6,271,720 col. 1, line 60-col. 2, line 5 and US patent No. 6,262,623 both provide a motivation to use an active filter. The comment at the bottom of page 7 is incomplete. In addition, Page 8 of the comment refers to a rejection of claim 9. However, it is noted

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that claim 9 is a cancelled claim. In addition page 8 refers to the wrong set of claim, i.e. claims 1 and 9-16 present in the application.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jean B Corrielus
Primary Examiner
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4-12-07